

RECEIVED
CENTRAL FAX CENTER

Attorney's Docket 071469-0305806
Client Reference: PC0267A

MAY 25 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:
STEVEN T. FINK, ET AL.

Confirmation No: 3532

Application No.: 10/705,224

Group Art Unit: 1763

Filed: November 12, 2003

Examiner: Sylvia MacArthur

Title: METHOD AND APPARATUS FOR IMPROVED BAFFLE PLATE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATION OF FACSIMILE TRANSMISSION
UNDER 37 C.F.R. §1.8

I hereby certify that the following papers are being facsimile
transmitted to the Patent and Trademark Office at (571) 273-8300 on the date
shown below:

REPLY BRIEF IN RESPONSE TO EXAMINER'S ANSWER
OF APRIL 5, 2007

PILLSBURY WINTHROP SHAW PITTMAN LLP



E. R. HERNANDEZ
Reg. No. 47641

Date: May 25, 2007
P.O. Box 10500
McLean, VA 22102
Telephone: (703) 770-7900
Facsimile: (703) 770-7901

(Certification of Facsimile Transmission—page 1)

RECEIVED
CENTRAL FAX CENTERIN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

MAY 25 2007

In re PATENT APPLICATION of:

FINK *et al.*

Group Art Unit: 3532

Appln. No.: 10/705,224

Examiner: MacArthur, Sylvia

Filed: November 12, 2003

Title: METHOD AND APPARATUS FOR IMPROVED BAFFLE PLATE

- REPLY BRIEF UNDER 37 C.F.R. §41.41 -Mail Stop Appeal-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Appellants hereby submit this Reply Brief in response to the Examiner's Answer of April 5, 2007.

I. REPLY ARGUMENT

Appellants simply point out that the Examiner's rejections should be reversed because the applied references simply do not teach each and every claim limitation.

A. Clarifying Remarks

Despite the clear language of the claims and the definitions and descriptions provided by the disclosed embodiments, it is apparent that the Examiner has a fundamental problem understanding the elements and configuration of the claimed subject matter. In an attempt to further clarify the claimed subject matter, Appellants first rely on the described embodiments as well as very basic principles known to those in the art.

The components in the interior of a plasma processing chamber (including the baffle plate) are exposed to active plasma and, over time, are susceptible to erosion. (Specification: page 1, par. [0003]). It is well known to those of ordinary skill, that replacing a baffle plate in conventional plasma chambers requires the disassembly of the components associated with

4IN575513-1

FINK, et. al
U.S. Patent Appl. No. 10/705,224

- Reply Brief -

the substrate holder and baffle plate. Once the new baffle plate is installed, painstaking efforts are taken to ensure that the entire substrate holder and baffle plate assembly are centered within millimeter tolerances so that the outer edge of the baffle plate does not touch or scratch the interior of the plasma chamber wall, as the substrate holder moves up and down within the chamber.

In order to avoid such painstaking efforts, the claimed subject matter is directed to a baffle plate assembly which includes a centering ring that is specifically designed to "automatically center" the baffle plate around the substrate holder by coupling a mating feature on the baffle plate with a centering ring attached to the substrate holder. (Specification: page 8, par. [0040]). For example, as made clear by the disclosed embodiments, the mating feature on baffle plate 64 comprises a mating surface 87 on the inner radial edge 86 (see, FIG. 5) while the centering ring 100 is affixed to the substrate holder. The centering ring 100 comprises a flange region 110, and a lip region 112, wherein the lip region 112 further comprises a centering surface 120 (see, FIGs. 6, 7). The mating surface 87 of baffle plate 64 is attached to the centering surface 120 via bolts (or other electrically conductive fasteners). As such, baffle plate 64 is coupled to the portion of the centering ring 100 that extends radially outside the periphery of the substrate holder (*i.e.*, centering surface 120) and, by virtue of this coupling, baffle plate 64 is automatically centered.

Once the claimed configuration is in place, an eroded or damaged baffle plate 64 may be easily replaced by removing the bolts that hold the mating surface 87 of baffle plate 64 to the centering surface 120, lifting the eroded baffle plate 64 away, lowering and aligning the mating surface 87 of the new baffle plate 64 to the centering surface 120, and bolting the new baffle plate 64 in place. In this manner, the painstaking efforts typically taken to ensure that the entire substrate holder and baffle plate assembly are centered within millimeter tolerances are avoided. (Specification: page 8, pars. [0049]-[0050]).

With this said, each of independent claims 1, 16, and 17 positively recite, in one form or another, a *centering ring* configured to be coupled to the substrate holder, wherein at least a portion of the centering ring extends radially outside a periphery of the substrate holder, and a *baffle plate* comprising one or more passageways, wherein the baffle plate is configured to

- Page 2 of 6 -

400573513v1

FINK, et. al

U.S. Patent Appln. No. 10/705,224

- Reply Brief -

be centered within the plasma processing system by coupling the baffle plate to the portion of the centering ring extending radially outside the periphery of the substrate holder.

B. Examiner Rejections Based on Hiroyuki

Straight to the point, there is *not* a single mention in Hiroyuki of any type of device that is either specifically configured to center, or is capable of centering, the baffle plate. Hiroyuki merely discloses an insulating ring 13 and a baffle plate 12 positioned beneath the insulating ring 13 between an end face of the electrode protection member 8 and a side face of the electrostatic chuck 4. (Hiroyuki: par. [0018]; FIG. 1).

The Examiner continues to assert that insulating ring 13 corresponds to the claimed centering ring. Such an assertion must fail, as even a casual inspection of FIG. 1 demonstrates that insulating ring 13 sits on top of baffle plate 12 – which means that the insulating ring 13 must be mounted *after* the baffle plate 12 has already been centered and installed. As such, insulating ring 13 cannot, under any circumstance, act or otherwise function as a centering ring.

Accordingly, Appellant respectfully submits that Hiroyuki is incapable of teaching each and every feature of the independent claims. Thus, for these reasons, among others, the Appellant respectfully submits that Hiroyuki cannot be relied upon to anticipate any of the independent claims.

C. Examiner Rejections Based on Tomoyasu et al.

Like Hiroyuki, there is nothing in Tomoyasu et al. that remotely suggests any type of device that is either specifically configured to center, or is capable of centering, the baffle plate. Tomoyasu et al. discloses the use of a ring structure 325, that has a bent top portion 327 that rests on outer circumference of a susceptor 305 and an integrated baffle plate portion 326. (Tomoyasu et al.: col. 11, lines 5-19; FIG. 8.). As such, ring 325, bent top portion 327, and baffle plate portion 326 comprise an solitary integrated structure.

First, such an integrated ring structure cannot reasonably be construed as corresponding to the *separately* claimed “centering ring” and “baffle plate”. The claim language on its face makes it clear that these two elements are separate and distinct from each other. Second, the claims require that the baffle plate *be centered by coupling the baffle plate to the portion of the centering ring* that extends radially outside the periphery of the substrate

FINK, et. al
U.S. Patent Appln. No. 10/705,224

- Reply Brief -

holder. There is no discussion, whatsoever, of centering the baffle plate in Tomoyasu et al. and any replacement – or centering – of the baffle plate portion 326 necessarily requires the replacement of the entire integrated ring structure 325, which is antithetical to the spirit and purpose of the claimed invention.

Appellant points out that the Examiner has also taken an unreasonably broad interpretation of the term “coupling.” As noted in the remarks above in Section I.A, the thrust of the claimed invention is to be able to install a centering ring that allows a baffle plate to be fastened to it, so that after time, an eroded baffle plate may be easily removed by unfastening the bolts, lifting the eroded baffle plate, lowering and aligning the new baffle plate with the centering ring, and then fastening the new baffle plate to the ring, so that the new baffle plate is automatically centered. In support, the disclosed embodiments repeatedly identify that the “coupling” of the baffle plate to the centering ring is achieved through bolts or other fasteners.

Despite such evidence of what is meant by the term “coupling,” the Examiner takes the position that the “integration” of ring 325, bent top portion 327, and baffle plate portion 326 into a solitary integrated structure anticipates “coupling”. Given the context of the claimed subject matter, such interpretation cannot stand as it flies in the face of the purpose and spirit of the claimed invention.

Accordingly, Appellant respectfully submits that Tomoyasu et al. is incapable of teaching each and every feature of the independent claims. Thus, for these reasons, among others, the Appellant respectfully submits that Tomoyasu et al. cannot be relied upon to anticipate any of the independent claims.

D. Examiner Rejections Based on Li et al.

Once again, like the previous references, Li et al. fails to suggest any type of device that is either specifically configured to center, or is capable of centering, the baffle plate. Li et al. discloses a perforated plasma confinement ring 222 (equivalent to a baffle plate) that is disposed outside of the outer periphery of the bottom electrode 210 such that the perforated plasma confinement ring 222 abuts the focus ring 216, if the focus ring 216 is present. (Li et al.: col. 5, lines 25-28; FIG. 3). The focus ring 216, which is optional, is disposed around the outer periphery of the bottom electrode 210. (Li et al.: col. 5, lines 5-7; FIG. 3). There is

FINK, et. al
U.S. Patent Appln. No. 10/705,224

- Reply Brief -

absolutely nothing to suggest that focus ring 216 is a centering ring – to the contrary, the focus ring 216 appears to merely form the housing for bottom electrode 210.

Equally notable is the fact that FIG. 3 clearly depicts confinement ring 222 to be electrically connected to an external ground. Artisans of ordinary skill will readily appreciate that confinement ring 222 must, therefore, be attached, via electrically conductive fasteners, to the interior wall of the chamber – and *not* to the portion of the centering ring that extends radially outside the periphery of the substrate holder, as required by the claims. There is, indeed a gap between confinement ring 222 and the substrate holder. As such, Li et al. clearly *teaches away* from the features and configuration of the claimed invention.

Accordingly, Appellant respectfully submits that Li et al. is incapable of teaching each and every feature of the independent claims. Thus, for these reasons, among others, the Appellant respectfully submits that Li et al. cannot be relied upon to anticipate any of the independent claims.

E. Examiner Rejections Based on Ludvikkson et al.

Yet again, like all the previous references, Ludvikkson et al. fails to suggest any type of device that is either specifically configured to center, or is capable of centering, the baffle plate. Ludvikkson et al. discloses a method of using a sensor gas to determine the erosion level of consumable system components in an apparatus having a baffle plate 64 that extends about the periphery of the substrate holder 30 and a focus ring 60 and shield ring 62 coupled to the substrate holder 30. (Ludvikkson et al.: paragraph [0047].) There is absolutely no discussion or suggestion in Ludvikkson et al. that focus ring 60 and shield ring 62 are capable of any type of centering functionality.

Moreover, as FIG. 1 makes it painfully apparent, baffle plate 64 is attached to the interior wall of the chamber – and *not* to the portion of the centering ring that extends radially outside the periphery of the substrate holder, as required by the claims. In fact, FIG. 1 depicts a gap between baffle plate 64 and the substrate holder 30. As such, like Li et al., Ludvikkson et al. clearly *teaches away* from the features and configuration of the claimed invention.

Accordingly, Appellant respectfully submits that Ludvikkson et al. is incapable of teaching each and every feature of the independent claims. Thus, for these reasons, among

FINK, et. al
U.S. Patent Appln. No. 10/705,224

- Reply Brief -

others, the Appellant respectfully submits that Ludviksson et al. cannot be relied upon to anticipate any of the independent claims.

II. CONCLUSION

In conclusion, the Appellant respectfully submits that, based on the reasons advanced above and in the Appeal Brief, the claims under appeal are patentable. Accordingly, the Appellant respectfully requests reversal of all the Examiner's outstanding rejections.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By



E. Rico Hernandez
Reg. No.: 47,641
Tel. No.: (703)770-7788
Fax No.: (703) 770-7901

May 25, 2007
ERH
P.O. Box 10500
McLean, VA 22102
(703) 770-7900